

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

IN RE PCT NATIONAL STAGE APPLICATION OF
COLLINGWOOD, STEPHEN P ET AL.

ART UNIT: 1625

EXAMINER: CHANG, CELIA C

INTERNATIONAL APPLICATION NO: PCT/EP2004/006795

FILED: JUNE 23, 2004

U.S. APPLICATION NO: 10/561366

35 USC §371 DATE: MAY 15, 2006

FOR: PIPERIDINIUM AND PYRROLIDINIUM DERIVATIVES AS LIGANDS
FOR THE MUSCARINIC M3 RECEPTOR

MS: Amendment

Commissioner for Patents

PO Box 1450

Alexandria, VA 22313-1450

AMENDMENT & REPLY

Sir:

This Reply is submitted in response to the Office Action mailed August 17, 2010 and the Advisory Action mailed December 10, 2010. Reconsideration and withdrawal of the present rejections are respectfully requested.

Amendments to the Claims are reflected in the listing of the claims which begins on page 2 of this paper.

Remarks/Arguments begin on page 10 of this paper.

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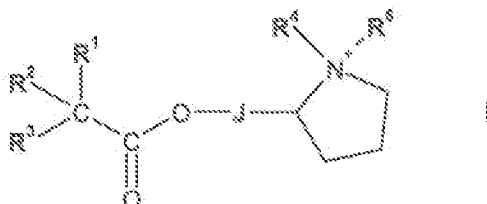
Amendments to the Claims

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This listing of claims will replace all prior versions, and listings, of claims in the application:

Listing of Claims:

Claim 1. (Previously Presented) A compound of formula I



in salt or zwitterionic form wherein

R^1 and R^3 are each independently a C₃-C₁₅-carbocyclic group or a 5- to 12-membered heterocyclic group having at least one ring heteroatom selected from nitrogen, oxygen and sulphur;

R^2 is hydroxy;

J is C₁-C₂-alkylene;

R^4 is C₁-C₄-alkyl;

R^5 is C₁-alkyl substituted by -CO- R^6 , or -CO-NH- R^6 ,

or R^5 is C₂-C₁₀-alkyl substituted by -O- R^6 , -O-CO- R^6 , or - R^8 ,

or R^5 is C₂-C₁₀-alkenyl or C₂-C₁₀-alkynyl optionally substituted by - R^8 ;

R^6 is a C₃-C₁₅-carbocyclic group,

or R^6 is C₁-C₁₀-alkyl optionally substituted by C₁-C₁₀-alkoxy, -O- R^8 or a C₃-C₁₅-carbocyclic group; and

R^8 is a C₃-C₁₅-carbocyclic group.

Claim 2. (Canceled)

²
Claim ~~2~~¹. (Previously Presented) A compound according to claim ~~2~~¹, wherein

R^1 and R^3 are each independently a C₃-C₁₀-carbocyclic group, preferably phenyl, or a 5- to 9-membered heterocyclic group having at least one ring heteroatom selected from nitrogen, oxygen and sulphur, preferably thienyl;

R^2 is hydroxy;

J is C₁-C₂-alkylene;

R^4 is C₁-C₄-alkyl;

R^5 is C₁-alkyl substituted by -CO- R^6 or -CO-NH- R^6 ,

or R^5 is C₂-C₅-alkyl substituted by -O- R^6 , -O-CO- R^6 or - R^8 ,

or R^5 is C₂-C₄-alkenyl or C₂-C₈-alkynyl optionally substituted by - R^8 ;

R^6 is a C₃-C₁₀-carbocyclic group, preferably phenyl,

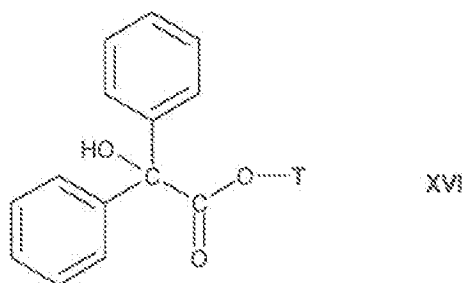
or R^6 is C1-C15-alkyl optionally substituted by C1-C4-alkoxy, O- R^8 or a C3-C10-carbocyclic group; and

R^8 is a C3-C10-carbocyclic group, preferably phenyl.

Claims 4-7. (Canceled)

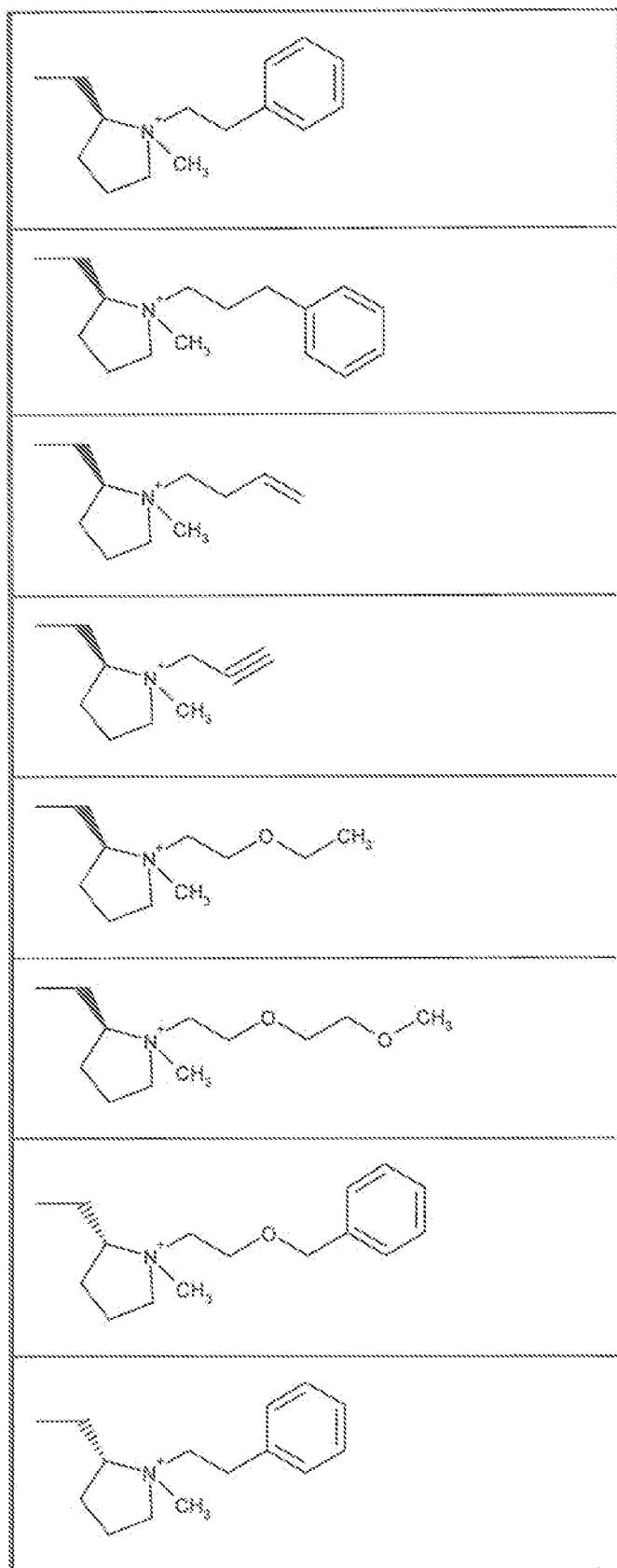
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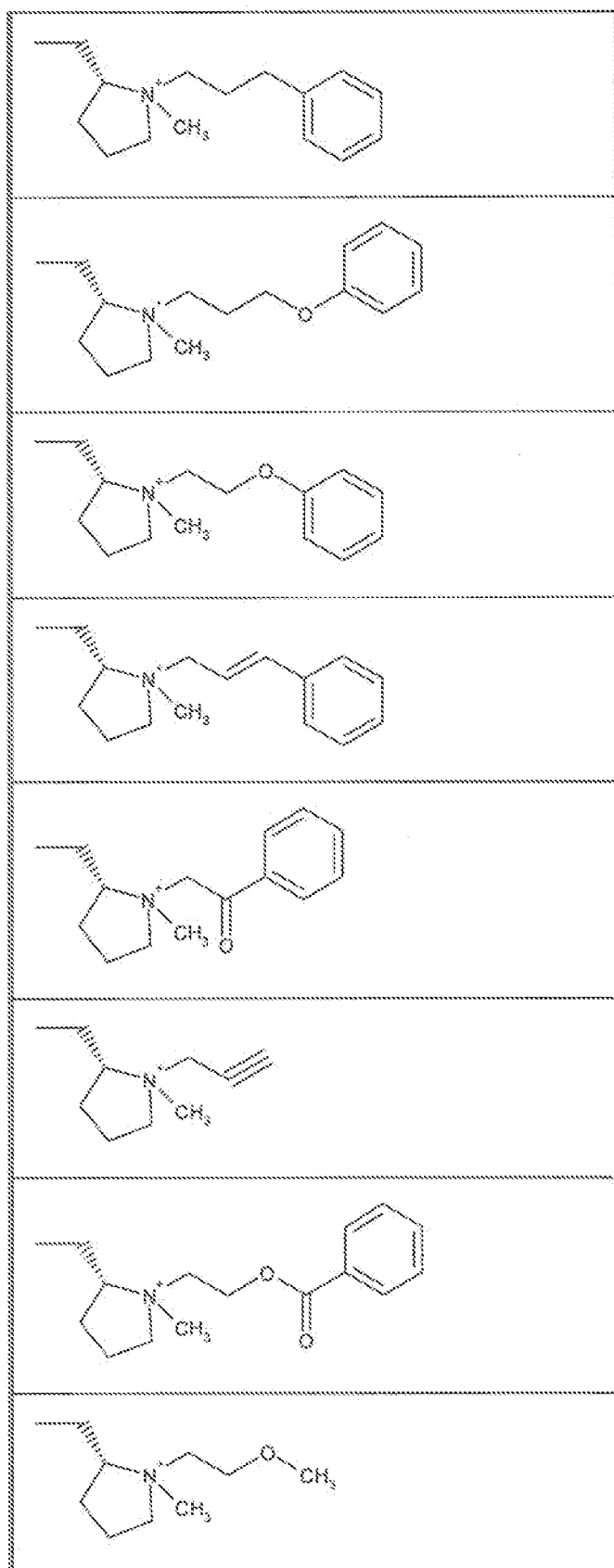
Claim 8. (Previously Presented): A compound according to claim 1, which is also a compound of formula XVI

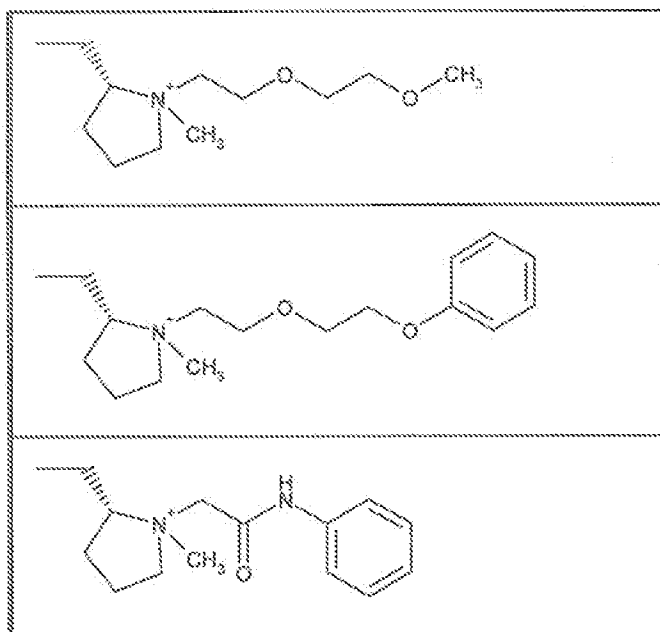


where T is as shown in the following table:

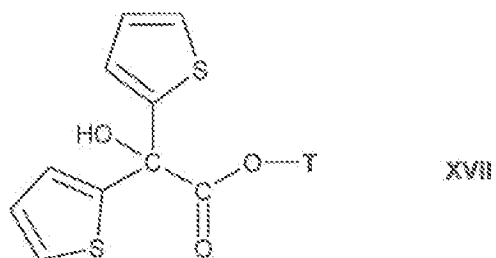
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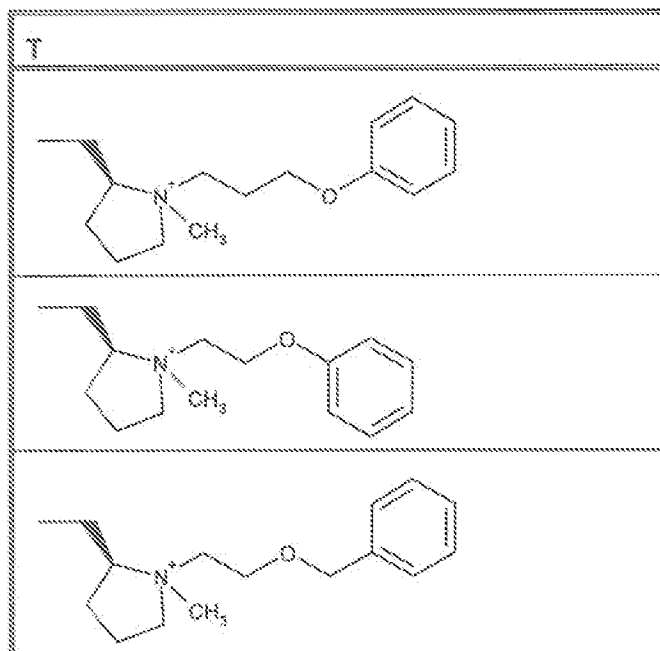


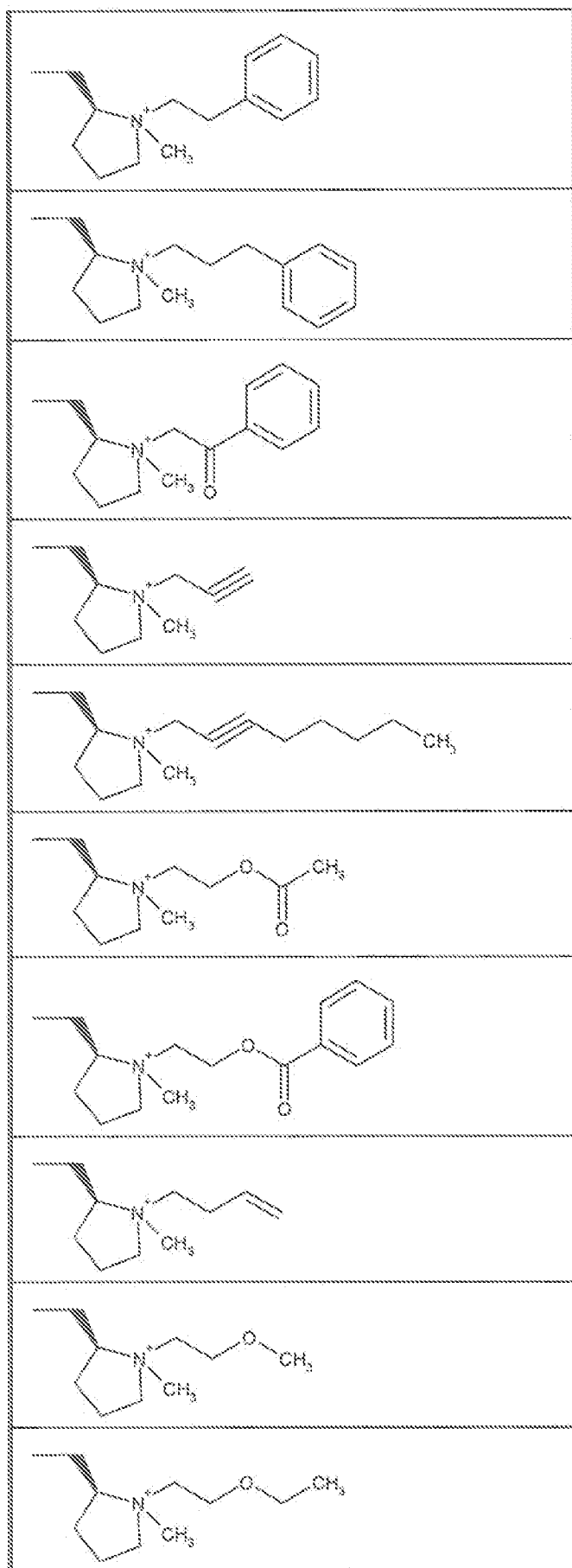


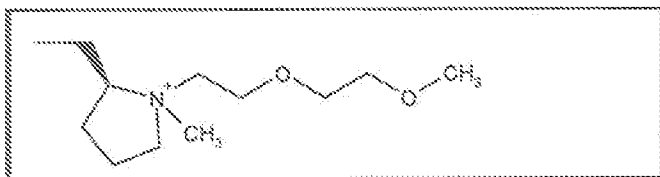
Claim ⁴ 8. (Previously Presented): A compound according to claim 1, which is also a compound of formula XVII



where T is as shown in the following table:







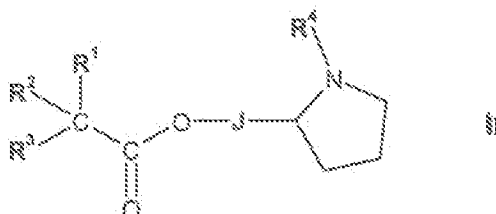
Claim 10. (Canceled)

Claim ~~11~~⁵. (Previously Presented): A pharmaceutical composition comprising as active ingredient a compound according to claim 1.

Claims 12-15. (Canceled)

Claim ~~16~~⁶. (Previously Presented): A process for the preparation of a compound of formula I as claimed in claim 1 which comprises:

(i) (A) reacting a compound of formula II

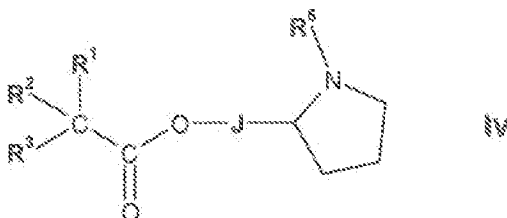


or a protected form thereof where R^1 , R^2 , R^3 , R^4 , and J, are as defined in claim 1, with a compound of formula III



where R^5 is as defined in claim 1 and X is chloro, bromo or iodo;

(B) reacting a compound of formula IV



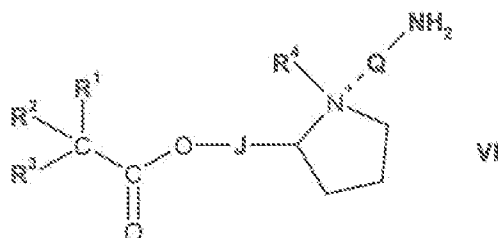
or a protected form thereof where R^1 , R^2 , R^3 , R^5 , and J are as defined in claim 1, with a compound of formula V



where R^4 is as defined in claim 1 and X is chloro, bromo or iodo; and

(ii) recovering the product in salt or zwitterionic form.

Claim ~~17~~⁸. (Previously Presented): A compound of formula VI



in salt or zwitterionic form wherein

R^1 and R^3 are each independently a C₃-C₁₅-carbocyclic group or a 5- to 12-membered heterocyclic group having at least one ring heteroatom selected from nitrogen, oxygen and sulphur;

R^2 is hydroxy;

J is C₁-C₂-alkylene;

R^4 is C₁-C₄-alkyl; and

Q is C₁-C₁₀-alkylene.

Claim ~~18~~⁹. (Original): A pharmaceutical composition according to claim ~~17~~⁸ wherein the compound is a single enantiomer.

Claims 19-20. (Canceled)

Claim ~~21~~⁷. (Withdrawn - Original): A method of treating an inflammatory or obstructive airways disease in a subject in need of such treatment, which comprises administering to said subject an effective amount of a compound of formula I as defined in claim 1 in free form or in the form of a pharmaceutically acceptable salt.

Claim 22. (Canceled)